Nwaonicha
10/571823


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=> fil reg
COST IN U.S. DOLLARS                                  SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       0.21       0.21

FILE 'REGISTRY' ENTERED AT 12:12:50 ON 26 JUL 2005
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STRUCTURE FILE UPDATES:   25 JUL 2005  HIGHEST RN 856925-80-9
DICTIONARY FILE UPDATES:  25 JUL 2005  HIGHEST RN 856925-80-9

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TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

**********************************************************************
*                                                                    *
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005.  A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*                                                                    *
**********************************************************************

Structure search iteration limits have been increased.  See HELP SLIMITS
for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

=> e dihydroxydiphenylsulfone/cn 5
E1            1     DIHYDROXYDIPHENYLSILANE-N,N'-(4,4'-DIPHENYLMETHANE)BISMALEIM
                    IDE COPOLYMER/CN
E2            1     DIHYDROXYDIPHENYLSILANE-TETRABUTOXYTITANIUM POLYMER/CN
E3            0 --> DIHYDROXYDIPHENYLSULFONE/CN
E4            1     DIHYDROXYDIPHENYLTELLURIUM/CN
E5            1     DIHYDROXYDIPICOLINATE SYNTHASE (CHROMOBACTERIUM VIOLACEUM ST
                    RAIN ATCC 12472 GENE CV2825)/CN

=> e trihydroxytriphenylsulfone/cn 5
E1            1     TRIHYDROXYSTEARIN/CN
E2            1     TRIHYDROXYTETRAFLUOROPROPANOL/CN
E3            0 --> TRIHYDROXYTRIPHENYLSULFONE/CN
E4            1     TRIHYDROXYVINYLSILANE/CN
E5            1     TRII PROTEIN (YERSINIA PSEUDOTUBERCULOSIS STRAIN IP32953 PLA
                    SMID PYV GENE TRII)/CN

=> s dihydroxy(l)diphenylsulfone
        358863 DIHYDROXY
           403 DIPHENYLSULFONE

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86
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```
L1          47 DIHYDROXY(L)DIPHENYLSULFONE

=> s trihydroxy(l)triphenylsulfone
         74472 TRIHYDROXY
             0 TRIPHENYLSULFONE
L2           0 TRIHYDROXY(L)TRIPHENYLSULFONE

=> s trihydroxy(l)triphenylsulphone
         74472 TRIHYDROXY
             0 TRIPHENYLSULPHONE
L3           0 TRIHYDROXY(L)TRIPHENYLSULPHONE

=> s trihydroxy(l)?phenylsulfone
LEFT TRUNCATION IGNORED FOR '?PHENYLSULFONE' FOR FILE 'REGISTRY'
         74472 TRIHYDROXY
           434 PHENYLSULFONE
L4           0 TRIHYDROXY(L)?PHENYLSULFONE
Left truncation is not valid in the specified search field in the
specified file.  The term has been searched without left truncation.
Examples: '?TERPEN?' would be searched as 'TERPEN?' and '?FLAVONOID'
would be searched as 'FLAVONOID.'

If you are searching in a field that uses implied proximity, and you
used a truncation symbol after a punctuation mark, the system may
interpret the truncation symbol as being at the beginning of a term.
Implied proximity is used in search fields indexed as single words,
for example, the Basic Index.

=> fil medl,biosis,embase,caplus;s (l1 or dihydroxydiphenylsulfone or
dihydroxydiphenylsulphone)
COST IN U.S. DOLLARS                          SINCE FILE     TOTAL
                                                 ENTRY    SESSION
FULL ESTIMATED COST                              38.52      38.73

FILE 'MEDLINE' ENTERED AT 12:15:10 ON 26 JUL 2005

FILE 'BIOSIS' ENTERED AT 12:15:10 ON 26 JUL 2005
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FILE 'EMBASE' ENTERED AT 12:15:10 ON 26 JUL 2005
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FILE 'CAPLUS' ENTERED AT 12:15:10 ON 26 JUL 2005
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L5           3 FILE MEDLINE
L6           2 FILE BIOSIS
L7           1 FILE EMBASE
L8        1120 FILE CAPLUS

TOTAL FOR ALL FILES
L9        1126 (L1 OR DIHYDROXYDIPHENYLSULFONE OR DIHYDROXYDIPHENYLSULPHONE)

=> s trihydroxytriphenylsulfone or trihydroxy(l)triphenylsulfone or
trihydroxy(l)triphenylsulphone
L10          0 FILE MEDLINE
L11          0 FILE BIOSIS


Prepared by: Mary Hale @2-2507 Rem Bldg 1D86
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L12           0 FILE EMBASE
L13           0 FILE CAPLUS

TOTAL FOR ALL FILES
L14           0 TRIHYDROXYTRIPHENYLSULFONE OR TRIHYDROXY(L) TRIPHENYLSULFONE OR
                TRIHYDROXY(L) TRIPHENYLSULPHONE

=> s ?triphenylsulfone? or ?triphenylsulphone?
L15           0 FILE MEDLINE
L16           0 FILE BIOSIS
L17           0 FILE EMBASE
L18           1 FILE CAPLUS

TOTAL FOR ALL FILES
L19           1 ?TRIPHENYLSULFONE?. OR ?TRIPHENYLSULPHONE?

=> s l9 and l19
L20           0 FILE MEDLINE
L21           0 FILE BIOSIS
L22           0 FILE EMBASE
L23           0 FILE CAPLUS

TOTAL FOR ALL FILES
L24           0 L9 AND L19

=> s (dissolv? or suspend?) and l9
L25           0 FILE MEDLINE
L26           0 FILE BIOSIS
L27           0 FILE EMBASE
L28          46 FILE CAPLUS

TOTAL FOR ALL FILES
L29          46 (DISSOLV? OR SUSPEND?) AND L9

=> s alkali metal hydroxide and l29
L30           0 FILE MEDLINE
L31           0 FILE BIOSIS
L32           0 FILE EMBASE
L33           0 FILE CAPLUS

TOTAL FOR ALL FILES
L34           0 ALKALI METAL HYDROXIDE AND L29

=> s crude and l29
L35           0 FILE MEDLINE
L36           0 FILE BIOSIS
L37           0 FILE EMBASE
L38           4 FILE CAPLUS

TOTAL FOR ALL FILES
L39           4 CRUDE AND L29

=> d 1-4 ibib abs;s wakayama f?/au;s yanase n?/au;s kitahara t?/au;s nate n?/au

L39  ANSWER 1 OF 4  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:         2001:780846  CAPLUS
DOCUMENT NUMBER:          135:318322
TITLE:                    Semi-continuous method for producing 4,4'-
                          dihydroxydiphenylsulfone from phenol and a
                          sulfonating agent in heated water

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86
```

INVENTOR(S): Pabst, Gunther; Kast, Juergen
PATENT ASSIGNEE(S): Basf A.-G., Germany
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001079163	A1	20011025	WO 2001-EP4081	20010410
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 10018580	A1	20011025	DE 2000-10018580	20000414
AU 2001054801	A5	20011030	AU 2001-54801	20010410
EP 1272462	A1	20030108	EP 2001-927904	20010410
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2003531137	T2	20031021	JP 2001-576765	20010410
US 2003149308	A1	20030807	US 2002-257328	20021010
US 6700020	B2	20040302		

PRIORITY APPLN. INFO.: DE 2000-10018580 A 20000414
WO 2001-EP4081 W 20010410
OTHER SOURCE(S): CASREACT 135:318322

AB A semi-continuous method for producing 4,4'-**dihydroxydiphenylsulfone** comprises: (a) reacting phenol with a sulfonating agent (e.g., concentrate sulfuric acid); (b) **suspending** the resulting **crude** product in ≥40° water which is free from inert organic solvents and can contain residual amts. of unreacted phenol, and filtering off the product; and (c) returning the resulting waste streams containing the educt and/or product to the production process. Step (b) is carried out using the **crude** product and water in a weight ratio of 85:15 to 55:45.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1995:356764 CAPLUS
DOCUMENT NUMBER: 122:119046
TITLE: A heat-sensitive recording material.
INVENTOR(S): Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; Hosoda, Masaaki
PATENT ASSIGNEE(S): Nicca Chemical Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

EP 616897	A2	19940928	EP 1994-104540	19940323
EP 616897	A3	19941214		
EP 616897	B1	19990616		
R: CH, DE, FR, GB, IT, LI				
JP 06270550	A2	19940927	JP 1993-89426	19930324
US 5378674	A	19950103	US 1994-216379	19940323

PRIORITY APPLN. INFO.: JP 1993-89426 A 19930324

AB A heat-sensitive recording material comprises a heat-sensitive color forming layer which is formed on a supporter and contains a colorless or light color leuco dyestuff as a color forming substance, a developer which develops color of the leuco dyestuff by reaction with it when heated and a sensitizer. The developer is 2,4'-**dihydroxydiphenylsulfone** having purity of 97% or more and prepared by washing and drying crystal which is obtained by **dissolving crude** 2,4'-**dihydroxydiphenylsulfone** in an alc. having 1 to 4 C atoms or in a mixture of an alc. having 1 to 4 C atoms and H2O by heating and then cooling the solution or partially removing the solvent from the solution by distillation The heat-sensitive recording material has excellent properties, such as reduced fog and excellent image preservation (weatherability).

L39 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1990:7167 CAPLUS
DOCUMENT NUMBER: 112:7167
TITLE: Process for the purification and isolation of mixtures of 4,4'- and 2,4'-**dihydroxydiphenylsulphone**
INVENTOR(S): Arient, Josef
PATENT ASSIGNEE(S): Czech.
SOURCE: Czech., 3 pp.
CODEN: CZXXA9
DOCUMENT TYPE: Patent
LANGUAGE: Czech
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 257071	B1	19880415	CS 1986-6143	19860822

PRIORITY APPLN. INFO.: CS 1986-6143 19860822

AB PhOH is sulfonated at 180-190°, the **crude** product is **dissolved** in hot aqueous NaOH, and the solution is boiled with C to remove resinous and colored contaminants. The hot filtrate is decolorized with a 2-5% aqueous Na2S2O5 solution and product (70%) containing the title compds. is separated with HCl from a cooled solution

L39 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1946:32301 CAPLUS
DOCUMENT NUMBER: 40:32301
ORIGINAL REFERENCE NO.: 40:6281c-e
TITLE: U.S. Government reports disclose German process developments
AUTHOR(S): Curtis, Francis J.; Fogler, F.
CORPORATE SOURCE: I.G. Farbenindustrie A.-G. Elherfeld and Leverkusen
SOURCE: Shoe and Leather Reporter (1946), 241(No. 11), 29-30
CODEN: SLREAY; ISSN: 0096-9257
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Tanigan Extra A is a mixture of 4,4-**dihydroxydiphenylsulfone** (I)

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86

and **dihydroxydiphenylsulfone** formaldehyde resin (II) in sulfite liquor (III). To prepare III treat raw CaHSO3 waste liquor at 50° with 50% NaOH to pH 8.6, then at 55° with NaOH until no further precipitate of lime forms. Mix 0.5 hr., filter, let settle 12 hrs. until Ca content is less than 0.1%, then concentrate to 53% solids. To prepare I run 1600 l. of H2SO4.H2O into 9400 l. of **crude** phenol at 65° in 3 hrs.; heat under reduced pressure to 150°, distilling off 5000 l. of excess phenol and H2O in 30 hrs. Neutralize and **dissolve** in 520 l. of 50% NaOH and 2600 l. of H2O under pressure. The resin is prepared by stirring together 11,600 l. of III and 800 l. of I at 110°, adjusting to an alkali number of 4.0, then, at 65°, adding the necessary HCHO (approx. 60 l. per 100 kg. of sulfone) in 20 min. and heating to 105° until condensation is complete. Yield: 4.4 to 4.8 times the amount of phenol. Brief descriptions of preparation of Tanigans Extra B and Extra E are given.

```
L40           3 FILE MEDLINE
L41           1 FILE BIOSIS
L42           2 FILE EMBASE
L43           1 FILE CAPLUS

TOTAL FOR ALL FILES
L44           7 WAKAYAMA F?/AU


L45          32 FILE MEDLINE
L46          26 FILE BIOSIS
L47          29 FILE EMBASE
L48         188 FILE CAPLUS

TOTAL FOR ALL FILES
L49         275 YANASE N?/AU


L50         369 FILE MEDLINE
L51         458 FILE BIOSIS
L52         326 FILE EMBASE
L53         994 FILE CAPLUS

TOTAL FOR ALL FILES
L54        2147 KITAHARA T?/AU


L55           0 FILE MEDLINE
L56           5 FILE BIOSIS
L57           0 FILE EMBASE
L58          21 FILE CAPLUS

TOTAL FOR ALL FILES
L59          26 NATE N?/AU

=> s oi f?/au
L60           7 FILE MEDLINE
L61          10 FILE BIOSIS
L62           2 FILE EMBASE
L63          28 FILE CAPLUS
```

TOTAL FOR ALL FILES
L64 47 OI F?/AU

=> s l64 and l59 and l54 and l49
L65 0 FILE MEDLINE
L66 0 FILE BIOSIS
L67 0 FILE EMBASE
L68 2 FILE CAPLUS

TOTAL FOR ALL FILES
L69 2 L64 AND L59 AND L54 AND L49

=> d 1-2 ibib abs

L69 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:875243 CAPLUS
DOCUMENT NUMBER: 139:350539
TITLE: Process for producing dihydroxydiphenyl sulfone by crystallization
INVENTOR(S): **Oi, Fumio; Yanase, Norio; Kitahara, Takayuki; Nate, Nobuyuki**
PATENT ASSIGNEE(S): Konishi Chemical Ind. Co., Ltd., Japan
SOURCE: PCT Int. Appl., 12 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003091206	A1	20031106	WO 2003-JP5228	20030424
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1498412	A1	20050119	EP 2003-725653	20030424
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				

PRIORITY APPLN. INFO.: JP 2002-123646 A 20020425
WO 2003-JP5228 W 20030424

AB Disclosed is a process for producing dihydroxydiphenyl sulfone in which only trihydroxytriphenyl disulfone and coloring impurities are effectively removed without changing the proportion of dihydroxydiphenyl sulfone isomers. The process for producing dihydroxydiphenyl sulfone is characterized by dissolving or suspending crude dihydroxydiphenyl sulfone containing trihydroxytriphenyl disulfone in an aqueous solvent, regulating the pH of the solution or suspension to 5 to 7, optionally cooling it, and separating out the dihydroxydiphenyl sulfone crystals precipitated This process is superior in handlability, safety, sanitation, and cost effectiveness since it uses

water instead of organic solvent. Thus, a mixture of 4,4'-dihydroxydiphenyl sulfone 75, 2,4'-dihydroxydiphenyl sulfone 20, and trihydroxytriphenyl disulfone 5 weight% (100 g containing 0.39 mol 4,4'- and 2,4'-dihydroxydiphenyl sulfone and trihydroxytriphenyl disulfone, APHA 1,000 in acetone solution) was treated with 300 g H2O and 8 g NaOH (0.2 mol, 0.5-times mole vs. the sulfones), dissolved under heating at 90°, adjusted to pH 6.5 by adding 50% aqueous H2SO4, and cooled to 35°, followed by filtration of the precipitated crystals, washing with water, and drying to give 92 g dry crystals containing 4,4'-dihydroxydiphenyl sulfone 78.9, 2,4'-dihydroxydiphenyl sulfone 21.0, and trihydroxytriphenyl disulfone 0.1 weight% (APHA 400 in acetone solution).

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:841197 CAPLUS
DOCUMENT NUMBER: 139:343510
TITLE: Process for manufacturing mixture of dihydroxydiphenylsulfone isomers
INVENTOR(S): Ogata, Eiji; **Oi, Fumio**; **Yanase, Norio**; **Nate, Nobuyuki**; **Kitahara, Takayuki**
PATENT ASSIGNEE(S): Konishi Kagaku Kogyo Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003306477	A2	20031028	JP 2002-352839	20021204
PRIORITY APPLN. INFO.:			JP 2002-38473 A	20020215

AB The title process comprises heating a crude mixture of 2,4'-dihydroxydiphenylsulfone (I), 4,4'-dihydroxydiphenylsulfone (II), water, and an alkali (0.55 equiv relative to the total amount of I and II), cooling the mixture, separating the crystals of II, and adding an acid to the separated liquid
The mixture obtained by the title process contains 25 to 50 weight% I. I and II are developers for thermal recording material.

=> fil reg

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	64.51	103.24
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-4.38	-4.38

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86

STRUCTURE FILE UPDATES: 25 JUL 2005 HIGHEST RN 856925-80-9
DICTIONARY FILE UPDATES: 25 JUL 2005 HIGHEST RN 856925-80-9

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TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when conducting SmartSELECT searches.

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* *
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
* *
****

Structure search iteration limits have been increased. See HELP SLIMITS for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

```
=> e "2,4'-dds"/cn 5
E1            1     2,4'-CYCLOHEXYLIDENEDIPHENOL/CN
E2            1     2,4'-DDE/CN
E3            0 --> 2,4'-DDS/CN
E4            1     2,4'-DDT/CN
E5            1     2,4'-DI(SEC-BUTYLAMINOPHENYL) ETHER/CN

=> e "4,4'-dds"/cn 5
E1            1     4,4'-DDD/CN
E2            1     4,4'-DDE/CN
E3            0 --> 4,4'-DDS/CN
E4            1     4,4'-DDT/CN
E5            1     4,4'-DECAMETHYLENEBIS(1,1-DIETHYLPIPERAZINIUM IODIDE)/CN

=> e "2,4'-dihydroxydiphenylsulfone"/cn
E1            1     2,4'-DIHYDROXYDIPHENYLMETHANE-4,4'-DIHYDROXYDIPHENYLMETHANE-
                    PHENOL-FORMALDEHYDE POLYMER/CN
E2            1     2,4'-DIHYDROXYDIPHENYLMETHANE-FORMALDEHYDE COPOLYMER/CN
E3            0 --> 2,4'-DIHYDROXYDIPHENYLSULFONE/CN
E4            1     2,4'-DIISOCYANATO-1,1'-BICYCLOHEXYL/CN
E5            1     2,4'-DIISOCYANATO-1,2-DIPHENYLETHANE/CN
E6            1     2,4'-DIISOCYANATO-3'-(ETHYLMERCAPTO)DIPHENYL SULFIDE/CN
E7            1     2,4'-DIISOCYANATO-3'-CHLORODIPHENYL SULFIDE/CN
E8            1     2,4'-DIISOCYANATO-3'-CHLORODIPHENYL SULFONE/CN
E9            1     2,4'-DIISOCYANATO-3'-ETHYLDIPHENYL SULFIDE/CN
E10           1     2,4'-DIISOCYANATO-5-METHOXYDIPHENYL SULFIDE/CN
E11           1     2,4'-DIISOCYANATODIPHENYL ETHER/CN
E12           1     2,4'-DIISOCYANATODIPHENYL SULFIDE/CN

=> e "2,4'-dihydroxydiphenyl sulfone"/cn
E1            1     2,4'-DIHYDROXYCHALCONE/CN
E2            1     2,4'-DIHYDROXYDIBENZOYLMETHANE/CN
E3            1 --> 2,4'-DIHYDROXYDIPHENYL SULFONE/CN
```

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86

```
E4            1     2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFON
                    E-FORMALDEHYDE COPOLYMER/CN
E5            1     2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFON
                    E-FORMALDEHYDE-P-PHENOLSULFONIC ACID COPOLYMER/CN
E6            1     2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFON
                    E-PHENYLDICHLOROPHOSPHINE OXIDE POLYMER/CN
E7            1     2,4'-DIHYDROXYDIPHENYLAMINE/CN
E8            1     2,4'-DIHYDROXYDIPHENYLDIMETHYLMETHANE/CN
E9            1     2,4'-DIHYDROXYDIPHENYLMETHANE/CN
E10           1     2,4'-DIHYDROXYDIPHENYLMETHANE-4,4'-DIHYDROXYDIPHENYLMETHANE-
                    PHENOL-FORMALDEHYDE POLYMER/CN
E11           1     2,4'-DIHYDROXYDIPHENYLMETHANE-FORMALDEHYDE COPOLYMER/CN
E12           1     2,4'-DIISOCYANATO-1,1'-BICYCLOHEXYL/CN

=> s e3-e6
              1 "2,4'-DIHYDROXYDIPHENYL SULFONE"/CN
              1 "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-F
                ORMALDEHYDE COPOLYMER"/CN
              1 "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-F
                ORMALDEHYDE-P-PHENOLSULFONIC ACID COPOLYMER"/CN
              1 "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-P
                HENYLDICHLOROPHOSPHINE OXIDE POLYMER"/CN
L70           4 ("2,4'-DIHYDROXYDIPHENYL SULFONE"/CN OR "2,4'-DIHYDROXYDIPHENYL
                SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE COPOLYMER"/C
                N OR "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL
                SULFONE-FORMALDEHYDE-P-PHENOLSULFONIC ACID COPOLYMER"/CN OR
                "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-P
                HENYLDICHLOROPHOSPHINE OXIDE POLYMER"/CN)

=> e "4,4'-dihydroxydiphenyl sulfone"/cn 5
E1            1     4,4'-DIHYDROXYDIPHENYL SULFIDE-ISOPHTHALOYL DICHLORIDE-TEREP
                    HTHALOYL DICHLORIDE COPOLYMER, SRU/CN
E2            1     4,4'-DIHYDROXYDIPHENYL SULFIDE-TEREPHTHALOYL CHLORIDE COPOLY
                    MER, SRU/CN
E3            1 --> 4,4'-DIHYDROXYDIPHENYL SULFONE/CN
E4            1     4,4'-DIHYDROXYDIPHENYL SULFONE BIS(DOCOSANOATE)/CN
E5            1     4,4'-DIHYDROXYDIPHENYL SULFONE BISFLUOROSULFATE/CN

=> s e3
L71           1 "4,4'-DIHYDROXYDIPHENYL SULFONE"/CN

=> fil medl,biosis,embase,caplus;s l70 or l71
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY    SESSION
FULL ESTIMATED COST                              24.72     127.96

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)    SINCE FILE      TOTAL
                                                 ENTRY    SESSION
CA SUBSCRIBER PRICE                               0.00      -4.38

FILE 'MEDLINE' ENTERED AT 12:24:44 ON 26 JUL 2005

FILE 'BIOSIS' ENTERED AT 12:24:44 ON 26 JUL 2005
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FILE 'CAPLUS' ENTERED AT 12:24:44 ON 26 JUL 2005
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Prepared by: Mary Hale @2-2507 Rem Bldg 1D86
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L72 0 FILE MEDLINE
L73 32 FILE BIOSIS
L74 0 FILE EMBASE
L75 1750 FILE CAPLUS

TOTAL FOR ALL FILES
L76 1782 L70 OR L71

=> s "4,4'-dihydroxydiphenyl sulfone"
L77 1 FILE MEDLINE
L78 1 FILE BIOSIS
L79 3 FILE EMBASE
L80 750 FILE CAPLUS

TOTAL FOR ALL FILES
L81 755 "4,4'-DIHYDROXYDIPHENYL SULFONE"

=> s "2,4'-dihydroxydiphenyl sulfone" ?
ADDITIONAL CHARACTERS REQUIRED AFTER '?' FOR LEFT TRUNCATION
Additional characters must follow the left truncation symbol in your search term. If your search term contains a punctuation mark before the truncation symbol and you are searching in a field that uses implied proximity, the system may interpret the truncation symbol as being at the beginning of a term. Implied proximity is used in search fields indexed as single words, for example, the Basic Index. To see which fields in the current file have left truncation, enter "HELP SFIELDS" at an arrow prompt (=>).

=> s "2,4'-dihydroxydiphenyl sulfone"
L82 0 FILE MEDLINE
L83 0 FILE BIOSIS
L84 0 FILE EMBASE
L85 170 FILE CAPLUS

TOTAL FOR ALL FILES
L86 170 "2,4'-DIHYDROXYDIPHENYL SULFONE"

=> s (l76 or l81 or l86) and (make or making or process?\ or produc?)
<------User Break------>

SEARCH ENDED BY USER
SEARCH ENDED BY USER

=> s (l76 or l81 or l86) and (make or making or process? or produc?)
L88 0 FILE MEDLINE
L89 8 FILE BIOSIS
L90 1 FILE EMBASE
L91 737 FILE CAPLUS

TOTAL FOR ALL FILES
L92 746 (L76 OR L81 OR L86) AND (MAKE OR MAKING OR PROCESS? OR PRODUC?)

=> s tri hydroxy triphenyl sulfone or trihydroxy triphenyl sulfone or trihydroxytriphenyl sulfone
L93 0 FILE MEDLINE
L94 0 FILE BIOSIS

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L95             0 FILE EMBASE
L96             0 FILE CAPLUS

TOTAL FOR ALL FILES
L97             0 TRI HYDROXY TRIPHENYL SULFONE OR TRIHYDROXY TRIPHENYL SULFONE
                  OR TRIHYDROXYTRIPHENYL SULFONE

=> s triphenylsulfone or triphenyl sulfone or trihydroxy(l)(sulfone or sulphone)
L98             0 FILE MEDLINE
L99             0 FILE BIOSIS
L100            1 FILE EMBASE
L101            6 FILE CAPLUS

TOTAL FOR ALL FILES
L102            7 TRIPHENYLSULFONE OR TRIPHENYL SULFONE OR TRIHYDROXY(L)(SULFONE
                  OR SULPHONE)

=> s l102 and l92
L103            0 FILE MEDLINE
L104            0 FILE BIOSIS
L105            0 FILE EMBASE
L106            0 FILE CAPLUS

TOTAL FOR ALL FILES
L107            0 L102 AND L92

=> s l92 and crystal? and crude
L108            0 FILE MEDLINE
L109            0 FILE BIOSIS
L110            0 FILE EMBASE
L111            8 FILE CAPLUS

TOTAL FOR ALL FILES
L112            8 L92 AND CRYSTAL? AND CRUDE

=> s l112 not (l39 or l69)
L113            0 FILE MEDLINE
L114            0 FILE BIOSIS
L115            0 FILE EMBASE
L116            5 FILE CAPLUS

TOTAL FOR ALL FILES
L117            5 L112 NOT (L39 OR L69)

=> d 1-5 ibib abs

L117 ANSWER 1 OF 5  CAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:         2004:758798  CAPLUS
DOCUMENT NUMBER:          141:277350
TITLE:                    Process for preparing mixture of
                          dihydroxydiphenylsulfone isomers
INVENTOR(S):              Oi, Satsuo; Yanase, Norio; Nate, Nobuyuki; Nagaoka,
                          Etsuzo
PATENT ASSIGNEE(S):       Konishi Kagaku Kogyo Co., Ltd., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 8 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:
```

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004256422	A2	20040916	JP 2003-47540	20030225

PRIORITY APPLN. INFO.: JP 2003-47540 20030225

AB In the manufacture of a mixture of 2,4'-dihydroxydiphenylsulfone (I) and 4,4'-dihydroxydiphenylsulfone (II) containing 10 weight% to 90 weight% I, said mixture of **crude** dihydroxydiphenylsulfone containing phenolsulfonic acid Ph ester (III) as impurity and a mixture of water and lower alc. (IV) containing ≥ 2 weight% IV are mixed and heated and then cooled, and the precipitating **crystals** are separated at pH 4 to 8. Thus, a mixture of **crude** II and I (II/I ratio = 67/33) containing 2.9 weight% III, water, methanol, and sodium hydroxide was stirred and heated until a solution was obtained at 69°C; said solution was cooled to 30°C to give **crystals** of I and II containing only 0.8 weight% III; the pH of said solution before the collection of the **crystals** was 6.8. A high quality heat-sensitive recording paper was **produced** using the title mixture

L117 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:756320 CAPLUS
DOCUMENT NUMBER: 141:277349
TITLE: Method for manufacturing a mixture of dihydroxydiphenylsulfone isomers
INVENTOR(S): Oi, Satsuo; Yanase, Norio; Nate, Nobuyuki; Nagaoka, Etsuzo
PATENT ASSIGNEE(S): Konishi Kagaku Kogyo Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004256421	A2	20040916	JP 2003-47538	20030225

PRIORITY APPLN. INFO.: JP 2003-47538 20030225

AB In the manufacture of a mixture of 2,4'-dihydroxydiphenylsulfone (I) and 4,4'-dihydroxydiphenylsulfone (II) containing 10 weight% to 90 weight% I, said mixture of **crude** dihydroxydiphenylsulfone containing phenolsulfonic acid Ph ester (III) as impurity, an alkaline substance (e.g., sodium hydroxide) at 0.02 to 0.4 equiv (relative to dihydroxydiphenylsulfone), and an aqueous solvent (e.g., water) are heated and mixed and then cooled, and the precipitating **crystals** are separated The title method is industrially advantageous. Thus, a mixture of **crude** II and I (II/I ratio = 67/33) containing 2.9 weight% III, water, and sodium hydroxide was stirred and heated until a solution was obtained at 92°C; said solution was cooled to 60°C and kept at 60°C for 1 h to give **crystals** of I and II containing only 0.4 weight% III. A high quality heat-sensitive recording paper was **produced** using the title mixture

L117 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:678778 CAPLUS
DOCUMENT NUMBER: 139:230468
TITLE: **Process** for preparation of

dihydroxydiphenylsulfone isomeric mixtures
INVENTOR(S): Oi, Fumio; Yanase, Norio; Nate, Nobuyuki
PATENT ASSIGNEE(S): Konishi Chemical Ind. Co., Ltd., Japan
SOURCE: PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003070695	A1	20030828	WO 2003-JP1836	20030220
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2003313160	A2	20031106	JP 2002-319967	20021101

PRIORITY APPLN. INFO.: JP 2002-46629 A 20020222
JP 2002-319967 A 20021101
OTHER SOURCE(S): CASREACT 139:230468

AB This invention pertains to a method for **producing** high-quality dihydroxydiphenylsulfone isomeric mixts. which cause color development (color formation) in non-image areas when used in thermal recording paper as the developer. Specifically, a **process** for the **prodn**. of dihydroxydiphenylsulfone isomeric mixts., characterized by subjecting a solution or suspension of a **crude** isomeric mixture comprising 2,4'-dihydroxydiphenylsulfone and 4,4'-dihydroxydiphenylsulfone in an organic solvent to cooling and filtration successively; a **process** for the **production** of dihydroxydiphenylsulfone isomeric mixts., characterized by mixing a solution or suspension of a **crude** isomeric mixture comprising 2,4'-dihydroxydiphenylsulfone and 4,4'-dihydroxydiphenylsulfone in an organic solvent with an aqueous basic solution to extract the isomeric mixture into the aqueous basic solution, removing the resulting organic solvent layer by liquid-liquid separation, adding an acid to the resulting aqueous basic solution to precipitate **crystals**, and recovering the **crystals** by filtration. For example, phenol was treated with concentrate H2SO4 in 1,2-dichlorobenzene to give a mixture of 2,4'-dihydroxydiphenylsulfone and 4,4'-dihydroxydiphenylsulfone (35/65).

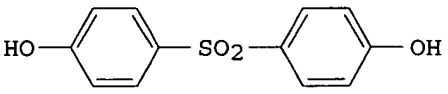
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L117 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1988:610700 CAPLUS
DOCUMENT NUMBER: 109:210700
TITLE: Synthesis of bisphenol S
INVENTOR(S): Cui, Xianghao; Wang, Yubin; et al.
PATENT ASSIGNEE(S): Jilin University, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 4 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 87100796	A	19870902	CN 1987-100796	19870218
CN 87100796	B	19880907		

PRIORITY APPLN. INFO.: CN 1987-100796 19870218
GI



I

AB Bisphenol S (I), a widely useful industrial chemical, is prepared in an economical **process** without environmental pollution. A mixture of PhOH 198, com. H2SO4 100, and recovered mother liquor from a previous run 287 g was heated 3 h at 190°, cooled to 160°, 10-30% EtOH added at 90°, the solution cooled to 30-50° to precipitate 240 g I and 400 g mother liquor. The **crude** I of 97% purity was purified through activated C to give I of 99.8% purity.

L117 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1960:97352 CAPLUS
DOCUMENT NUMBER: 54:97352
ORIGINAL REFERENCE NO.: 54:18409d-i,18410a-i,18411a-i,18412a-g
TITLE: Action of thiols and sulfinic acids on quinol acetates. II
AUTHOR(S): Wessely, F.; Swoboda, J.; Schmidt, G.
CORPORATE SOURCE: Univ. Vienna
SOURCE: Monatshefte fuer Chemie (1960), 91, 57-78
CODEN: MOCMB7; ISSN: 0026-9247
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
GI For diagram(s), see printed CA Issue.
AB cf. CA 51, 12848a. In continuation of prior work (loc. cit.), the action of MeSH, NaSH, H2S, PhSH, MeSO2H, and PhSO2H with various o-quinol acetates (I) in the presence of various bases in different solvents was investigated. The above thiols gave m- or o-substituted phenols in addition to p-substituted phenols resulting from addition, cleavage of AcOH, and rearrangement reactions. MeSO2H and PhSO2H gave chiefly m-substituted phenols. The following I, CR''':CR''.CR':CH.CR(OAc).CO were used (R, R', R'', R''' given): Me, H, H, H (II); Me, Me, H, H (III); Me, H, Me, H (IV); Me, Me, H, Me (V); Me, H, H, Me (VI); Et, H, H, Et (VII); Et, H, Ph, Et (VIII). The following results were obtained with the I and MeSH [I used, solvent, base, % o-substituted phenol, % m-substituted phenol, % p-substituted phenol, % reduction **product** (this was identical with that phenol which on oxidation with Pb(OAc)4 gave the I used), sum of identified reaction **products** (%), reaction time given]: II, CH2Cl2, Et3N, 15 2,6-Me(MeS)C6H3OH (IX), 12 2,5-Me(MeS)C6H3OH (X), 69 2,4-Me(MeS)C6H3OH (XI), trace, 96, several days; II, CH2Cl2, Et3N, 13 IX, 11 X, 67 XI, trace, 91, 1 day; II, CH2Cl2, Ph3P, 11 IX, 3 X, 40 XI, trace, 54, several days; II, MeOH, Et3N, 10 IX, 34 X, 49 XI, trace, 93, several days; II, MeOH, MeONa, 7 IX, 47 X, 34 XI, trace, 88, 1 hr.; III, CH2Cl2, Et3N, 28 2,4,6-Me2(MeS)C6H2OH (XII), 5 2,4,5-Me2(MeS)C6H2OH (XIII), -, 57, 90, several days; III, MeOH, MeONa, 13 XII, 44 XIII, -, 38, 95, 1 hr.; V, CH2Cl2, Et3N, -, 14 2,4,6,3-Me3(MeS)C6HOH (XIV), -, 80, 94, several days;

V, MeOH, MeONa, -, 42 XIV, -, 54, 96, 1 hr.; VI, CH2Cl2, Et3N, -, 6 2,6,3-Me2(MeS)C6H2OH (XV), 64 2,6,4-Me2(MeS)C6H2OH (XVI), 18, 88, several days; VI, MeOH, MeONa, -, 28 XV, 38 XVI, trace, 66, 1 hr. Treatment of the I with NaSH gave the following results [I used, % o-, % m-, and % p-substituted phenol, resp., % reduction **product**, sum of identified reaction **products** (%) given]: II, 5 2,6-Me(HS)C6H3OH (XVII), -, 20 2,4-Me(HS)C6H3OH (XVIII), 23, 55 {in addition 7% [3,4-Me(HO)C6H3]2S was isolated as the sulfone (XIX) (see below)]; III, -, 10 2,4,6-Me2(HS)C6H2OH (XX), -, 65, 75; V, -, trace 2,4,6,3-Me3(HS)C6HOH, -, 79, 79; VI, 20 2,6,4-Me2(HS)C6H2OH (XXI), -, -, 38, 77 {in addition 19% [3,5,4-Me2(HO)C6H2]2SO2 (XXII) was isolated as sulfone (see below)}. Treatment of the I with MeSO2H gave the following results (I used and % **product** obtained given): II, 91 2,5-Me(MeSO2)C6H3OH (XXIII); III, 94 2,4,5-Me2(MeSO2)C6H2OH (XXIV); IV, 16 2,5,4-Me2(MeSO2)C6H2OH (XXV); V, 88 2,4,6,3-Me3(MeSO2)C6HOH (XXVI); VI, 90 2,6,3-Me2(MeSO2)C6H2OH (XXVII). Treatment of the I with PhSH gave the following results (all **products** were isolated as sulfones) (I used, solvent, base, % o-, % m-, and % p-substituted phenol, resp., % reduction **product**, remarks given): II, MeOH, MeONa, -, 2,5-Me(PhSO2)C6H3OH (XXVIII), 0.8 2,4-Me(PhSO2)C6H3OH (XXIX), -, in addition 1% mixture probably of XXVIII and XXIX was obtained; III, MeOH, MeONa, 2,4,6-Me2(PhSO2)C6H2OH (XXX), 12 2,4,5-Me2(PhSO2)C6H2OH (XXXI), -, 30, in addition 5% mixture of XXX and XXXI was obtained; V, MeOH, MeONa, -, 6 2,4,6,3-Me3(PhSO2)C6HOH, -, 25, -; VI, MeOH, MeONa, -, 2,6,3-Me2(PhSO2)C6H2OH (XXXII), 2,6,4-Me2(PhSO2)C6H2OH (XXXIII), 2, 3% mixture of XXXII and XXXIII was obtained; VI, CH2Cl2, Et3N, -, -, 62 XXXIII, 19, -; VII, CHCl3, Et3N, -, -, 51 2,6,4-Et2(PhSO2)C6H2OH, -, -. The following results were obtained with the I and PhSO2H (I used and % **product** obtained given): VI, 68 XXXII; VII, 79 2,6,3-Et2(PhSO2)C6H2OH (XXXIV); VIII, 30 2,6,3,4-Et2Ph(PhSO2)C6HOH (XXXV). In the following exptl. work, methylation was accomplished in the usual way with excess Me2SO4 and aqueous NaOH at room temperature Oxidns. were effected by dissolving the corresponding thioether in a little AcOH, adding 1.5 times the calculated amount of 30% H2O2 (if the thioether precipitated, it was redissolved by dropwise addition of AcOH), allowing the mixture to stand overnight at room temperature, warming 30 min. on a H2O bath, precipitating the **product** with H2O, extracting oily **product** with CH2Cl2, washing the extract with saturated aqueous NaHCO3, drying, and evaporating; the residues containing sulfones with free OH groups were **crystallized** by rubbing with Et2O; sulfones without free OH groups were distilled in vacuo; if **crystalline product** precipitated from the oxidation mixture, the mixture was kept several hrs. in a refrigerator, the precipitate filtered off, and washed peroxide-free with dilute AcOH. In the reactions of the I with MeSH, NaSH, and H2S, mixts. of isomers were obtained in many cases, which were not quant. separable by the usual methods. In these cases, the yields given above were determined from other data. The compds. were identified by mixed m.ps., vapor phase chromatography, and m.p. diagrams with pure compds. or related derivs. The I dissolved in just the required amount of absolute MeOH at room temperature, the solution added dropwise with stirring during 1 hr. to MeSH in MeOH-MeONa (content 0.5 g. MeSH, 0.53 g. Na in 10 ml. MeOH), the mixture allowed to stand 1 hr., poured into 3 vols. H2O, acidified with HCl, extracted with Et2O, the extract washed with H2O, dried, evaporated, and the residue distilled gave a distillate whose composition was determined by gas chromatography. The separation of the reduction **products** and the o-substituted phenols from m- and

p-substituted phenols was accomplished by fractional distillation An analogous procedure was used for the isomeric mixture obtained from the I and H2S and NaSH. The I dissolved in just the required amount of solvent at room temperature, the solution treated with MeSH (2-4 moles/mole I) and Et3N (0.05-0.1 ml./g. I), the mixture allowed to stand several days in a bomb tube, the solvent and excess MeSH evaporated, the residue taken up in Et2O, the Et2O solution washed with dilute HCl and saturated aqueous NaHCO3, and worked up as above gave the **products.** The I with Ph3P (0.4 g./g. I) treated as in the Et3N expts., the solvent and excess MeSH evaporated, the residue taken up in dilute aqueous NaOH, the insol. Ph3P extracted with CH2Cl2, and the aqueous alkaline phase worked up as in the Et3N experiment gave the **products.** The isolation and properties of only the newly prepared compds. here and below were as follows. A mixture of 15% X and 85% XI oxidized (H2O2) and the mixture recrystd. from dilute AcOH gave 2,4-Me(MeSO2)C6H3OH, m. 126-7°, methylated to the Me ether. **Crude** XIII, obtained by dlstn., recrystd. from petr. ether gave XIII, m. 51-2°; Me ether (XXXVI) m. 50-1° (petr. ether). Oxidation of XIII gave XXIV, m. 139-40° (dilute AcOH); Me ether (by oxidation of XXXVI) m. 122-4° (dilute AcOH). From the reaction of IV with MeSH with Et3N was isolated 42% unidentified compound, C12H20O3S, m. 127-8° (MeOH), ν (CCl4) 1755, 1237, and 1089 cm.-1 **Crude** XIV recrystd. from petr. ether gave XIV, m. 58-9°; Me ether b10 130-50°. Oxidation of XIV gave XXVI, m. 154-5°. The I dissolved in a little absolute MeOH, the solution added dropwise with stirring during 1 hr. to 20% NaSH-absolute MeOH, the mixture allowed to stand 1 hr., poured into 3 vols. H2O, acidified, exhaustively extracted with Et2O, the extract evaporated, and the **product** distilled to 150°/0.3 mm. gave a residue (larger amts. from the I with a free 4-position), which oxidized yielded the corresponding **4, 4'-dihydroxydiphenyl sulfones**; the distillate dissolved in a little MeOH, the solution treated with 5% aqueous HgCl2, the precipitate (XXXVII) filtered off, and the filtrate worked up gave the corresponding reduced phenol; the XXXVII treated with Et2O-concentrated HCl and the Et2O layer distilled gave the mercaptans, b0.3 60-100°. Thus was obtained XX, m. 38-40° (petr. ether); Me ether (XXXVIII) m. 45-6°. The I dissolved in the smallest amount of solvent (CH2Cl2 in this case), the solution added dropwise with shaking to liquefied H2S (10 ml./g. I) followed by Et3N (1 drop/g. I), the mixture allowed to stand a specified time (2 days in this case) with continuous cooling with Dry Ice, the H2Sevapd., and the residue distilled to 150°/0.3 mm. gave 16% o-cresol (XXXIX) and (by oxidation of the mixture) 36% XIX. The above experiment repeated, allowed to stand 10 days, the mixture reduced in the cold with Zn and acid, and worked up gave 46% XXXIX, 2% XVII, 3% 2,5-Me(HS)C6H3OH (XL), 10% XVIII, and 2% XIX. The reaction repeated with absolute MeOH, the mixture allowed to stand 8 days, reduced in the cold with Zn and acid, and worked up gave 54% XXXIX, 0.4% XVII, 6% XL, 5% XVIII, and 4% XIX. III treated 2.5 days with H2S in CH2Cl2, the H2S evaporated, the residue treated with EtOH, the precipitate (40%) filtered off, washed with EtOH, and recrystd. twice from EtOH gave XLI, m. 165-70° (decomposition); from the filtrate was isolated 38% 2,4-Me2C6H3OH. MeSO2Cl (3-4 g. for each g. I to be used) reduced by the procedure for the preparation of EtSO2Na (Houben-Weyl-Muller, Methods Organic Chemistry, Stuttgart, 1955, IX, p. 292), the resulting sirupy solution of MeSO2Na acidified with 5% MeOH-HCl under ice cooling until weakly acid to Congo red, the precipitate filtered off, washed with MeOH, the filtrate and

washings added to the I dissolved in the least amount of MeOH, the mixture allowed to stand 2 days, warmed 30 min., the MeOH distilled, the residue taken up in H2O, the solution scratched, allowed to stand some time in the cold, and the precipitate filtered off gave the **product.** Thus were obtained XXIII, m. 116-17° (dilute aqueous AcOH), and XXVII, m. 131-2° (aqueous MeOH). CH:CH.CMe:CH.C(OAc)2.CO (XLII) (2 g.) treated with MeSH solution (MeSH-MeOH-MeONa) as above, the mixture worked up, the oily **product** methylated in the cold, the mixture heated 15 min. on a H2O bath with excess aqueous NaOH, treated again with Me2SO4, worked up, the **product** distilled (b10 150-70°), and recrystd. from petr. ether gave 44 % 4,1,2,5-Me(MeO)2(MeS)C6H2, m. 58-9°, oxidized to 90% corresponding sulfone (XLIII), m. 140-1° (dilute AcOH). XLII (1.5 g.) treated with MeSO4H like the I and the **product** saponified and methylated gave 1.12 g. XLIII. The I treated with PhSH (2 moles/mole I) as a 20% solution of PhSNa in absolute MeOH, the **product** dissolved in aqueous alkali, filtered, the filtrate acidified, extracted with Et2O, the extract evaporated, the residue distilled to 150°/10 mm. (reduction **product** and excess PhSH), and the residual viscous oil oxidized gave the sulfones. The I treated with PhSH using Et3N (CA 51, 12848a) and the **products** oxidized gave the sulfones. Thus were obtained XXXIII, m. 242-4.5° (EtOH), and XXXIV, m. 157-60° [Me ether m. 65-6.5° (dilute AcOH)]. IV treated with PhCH2SH with MeOH-MeONa (usual procedure) gave 8% mesitol and 45% 2,4,6,3-Me3(PhCH2S)C6HOH (**crude**), b0.3 160-200°, m. 70-1° (petr. ether), oxidized to the sulfone, m. 158-9°. II and XVIII treated with Et3N [by Kotlan and Wessely's procedure (loc. cit.) for the reaction of the I with PhSH with Et3N], the solvent evaporated, and the residue oxidized gave 60% XIX, m. 274-6° (AcOH). VI treated similarly with XXI gave 40% XXII, m. 303-6° (AcOH). The appropriate I treated with PhSO2H (by the procedure of K. and W., loc. cit.) gave XXXII, m. 128-9° (dilute AcOH), XXXIV, m. 86-7° (dilute AcOH), and XXXV, m. 156-8° (dilute AcOH). Comparison syntheses: O-Carbethoxyphenolsulfonyl chlorides were prepared from the corresponding phenolsulfonic acid di-Na salts [procedure of Karrer and Laiser (CA 39, 5197) for an analogous compound]. Sulfonyl chlorides of phenol ethers were prepared by treating the latter with ClSO3H (Kolhatkar and Bokil, CA 25, 2126). The sulfonyl chlorides were reduced to mercaptans by the procedure of Karrer and L. (CA 39, 5197). Oxidation of 2,4-Me(MeS)C6H3OMe (Shah, et al., CA 28, 1248) gave 76% sulfone, m. 71-2° (dilute AcOH). Oxidation of 2,5-Me(MeS)C6H3OMe (loc. cit.) gave 78% sulfone, m. 104-5° (dilute AcOH). From 2,4-Me(NaO3S)C6H3ONa (Hultquist, et al., CA 46, 6608h) was prepared 69% 2,4-Me(NaO3S)C6H3OCO2Et (XLIV). From **crude** XLIV was prepared 91% 2,4-Me(ClO2S)C6H3OCO2Et (XLV), m. 48-9° (petr. ether). **Crude** XLV reduced, saponified, and the **product** (b10 130-60°) recrystd. several times from petr. ether gave XVIII, m. 41-2°. 3,5,2-Me2(MeO)C6H2NH2 (CA 51, 12848a) diazotized in H2SO4 solution, the diazonium solution converted by SO2 (procedure of Shah, et al., CA 28, 1248) to **crude** 2,4,6-Me2(HO2S)C6H2OMe, the latter reduced, the mixture steam distilled, and the **product** distilled in vacuo gave 44% 2,4,6-Me2(HS)C6H2OMe (XLVI), b10 100-2°. XLVI methylated, the **product** (91%) distilled (b10 120-50°), and recrystd. from petr. ether gave XXXVIII, m. 45-6°, oxidized to 77% sulfone, m. 55-6° (dilute AcOH). 2,4,5-Me2(O2N)C6H2SO3Na hydrogenated with Raney Ni at 60°/50 atmospheric H pressure, filtered, the filtrate treated with 40 g. H2SO4, the solution treated with N oxide gas with ice-cooling and stirring until the solution colored KI-starch paper blue, added to hot dilute H2SO4, after N evolution ceased the mixture neutralized with BaCO3, filtered, the filtrate concentrated to 200 ml., treated with 13 g. NaOH and 35

g. ClCO2Et, the solution evaporated to dryness, the residue ground with 100 g. PCl5, the mixture decomposed with ice H2O, and the precipitate filtered off gave 58
g. 2,4,5-Me2(ClO2S)C6H2OCO2Et (XLVII), amorphous; a portion extracted with boiling petr. ether and recrystd. using C gave XLVII, m. 52.5-4.0°.
Crude XLVII reduced, saponified, and the **product** distilled gave 4.8 g. 2,4,5-Me2(HS)C5H2OH, b10 120-50°, m. 90-2°, methylated to XXXVI, m. 50-1°. 2,4-Me2C6H3OMe converted with ClSO3H to the 5-SO2Cl derivative, the latter reduced, the **product** isolated by steam distillation, purified by distillation (b10 120-50°), and recrystd. from petr. ether gave 2,4,5-Me2(HS)C6H2OMe, m. 37-9° (petr. ether), methylated to XXXVI. From 2,5-Me2C6H3OH was prepared 99% 2,5,4-Me2(NaO3S)C6H2ONa (XLVIII) (Hultquist, et al., CA 46, 6608h). From **crude** XLVIII was prepared 58% 2,5,4-Me2(NaO3S)C6H2OCO2Et, converted to 40% 2,5,4-Me2)ClO2S)C6H2OCO2Et (XLIX), m. 77-8° (petr. ether). XLIX reduced, saponified, and the **product** distilled (130-60°/10 mm.) gave 75% 2,5,4-Me2(HS)C6H2OH (L), m. 93-4° (petr. ether). L and equimolar amts. of MeI and NaOEt in EtOH heated 3 hrs. at 60° in a bomb tube gave 44% 2,5,4-Me2(MeS)C6H2OH, m. 96-7° (petr. ether), oxidized to 52% XXV, m. 143-4° (dilute AcOH). L methylated with MeI as above gave 62% XVI, m. 59-61° (petr. ether), oxidized to 62% sulfone, m. 156-7° (dilute AcOH). 4,1,2-Me(MeO)2C6H3 treated with ClSO3H gave 94% 5-SO2Cl derivative, m. 78-80°, reduced to 4,1,2,5-Me(MeO)2(HS)C6H2, m. 58-9° (petr. ether), methylated to 89% 4,1,2,5-Me(MeO)2(MeS)C6H2. 2,6-Et2C6H3OH oxidized with Pb(OAc)4 (Metlesics, et al., CA 52, 11775a) gave 52% VII, b0.2 82-4°. VII treated with PhMgBr (method of Wessely, et al., CA 47, 9936a), the mixture steam distilled in vacuo, and the **product** distilled gave 3.4 g. 2,6,3-Et2PhC6H2OH (LI), b0.1 125-35°. LI (3.5 g.) oxidized with Pb(OAc)4 in CHCl3 gave 2.14 g. VIII, m. 105-6°, which gave by Thiele rearrangement (cf. Wessely and Metlesics, CA 49, 9529c) 73% 2,6,5,1,3-Et2Ph(HO)2C6H, m. 112-13°, not oxidized by FeCl3 to a quinone.

=> d his all

(FILE 'HOME' ENTERED AT 12:12:37 ON 26 JUL 2005)

FILE 'REGISTRY' ENTERED AT 12:12:50 ON 26 JUL 2005
E DIHYDROXYDIPHENYLSULFONE/CN 5
E TRIHYDROXYTRIPHENYLSULFONE/CN 5
L1 47 S DIHYDROXY(L)DIPHENYLSULFONE
L2 0 S TRIHYDROXY(L)TRIPHENYLSULFONE
L3 0 S TRIHYDROXY(L)TRIPHENYLSULPHONE
L4 0 S TRIHYDROXY(L)?PHENYLSULFONE

FILE 'MEDLINE, BIOSIS, EMBASE, CAPLUS' ENTERED AT 12:15:10 ON 26 JUL 2005
L5 3 FILE MEDLINE
L6 2 FILE BIOSIS
L7 1 FILE EMBASE
L8 1120 FILE CAPLUS
TOTAL FOR ALL FILES
L9 1126 S (L1 OR DIHYDROXYDIPHENYLSULFONE OR DIHYDROXYDIPHENYLSULPHONE)
L10 0 FILE MEDLINE
L11 0 FILE BIOSIS
L12 0 FILE EMBASE
L13 0 FILE CAPLUS
TOTAL FOR ALL FILES
L14 0 S TRIHYDROXYTRIPHENYLSULFONE OR TRIHYDROXY(L)TRIPHENYLSULFONE O

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L15             0 FILE MEDLINE
L16             0 FILE BIOSIS
L17             0 FILE EMBASE
L18             1 FILE CAPLUS
     TOTAL FOR ALL FILES
L19             1 S ?TRIPHENYLSULFONE? OR ?TRIPHENYLSULPHONE?
L20             0 FILE MEDLINE
L21             0 FILE BIOSIS
L22             0 FILE EMBASE
L23             0 FILE CAPLUS
     TOTAL FOR ALL FILES
L24             0 S L9 AND L19
L25             0 FILE MEDLINE
L26             0 FILE BIOSIS
L27             0 FILE EMBASE
L28            46 FILE CAPLUS
     TOTAL FOR ALL FILES
L29            46 S (DISSOLV? OR SUSPEND?) AND L9
L30             0 FILE MEDLINE
L31             0 FILE BIOSIS
L32             0 FILE EMBASE
L33             0 FILE CAPLUS
     TOTAL FOR ALL FILES
L34             0 S ALKALI METAL HYDROXIDE AND L29
L35             0 FILE MEDLINE
L36             0 FILE BIOSIS
L37             0 FILE EMBASE
L38             4 FILE CAPLUS
     TOTAL FOR ALL FILES
L39             4 S CRUDE AND L29
L40             3 FILE MEDLINE
L41             1 FILE BIOSIS
L42             2 FILE EMBASE
L43             1 FILE CAPLUS
     TOTAL FOR ALL FILES
L44             7 S WAKAYAMA F?/AU
L45            32 FILE MEDLINE
L46            26 FILE BIOSIS
L47            29 FILE EMBASE
L48           188 FILE CAPLUS
     TOTAL FOR ALL FILES
L49           275 S YANASE N?/AU
L50           369 FILE MEDLINE
L51           458 FILE BIOSIS
L52           326 FILE EMBASE
L53           994 FILE CAPLUS
     TOTAL FOR ALL FILES
L54          2147 S KITAHARA T?/AU
L55             0 FILE MEDLINE
L56             5 FILE BIOSIS
L57             0 FILE EMBASE
L58            21 FILE CAPLUS
     TOTAL FOR ALL FILES
L59            26 S NATE N?/AU
L60             7 FILE MEDLINE
L61            10 FILE BIOSIS
L62             2 FILE EMBASE
L63            28 FILE CAPLUS
     TOTAL FOR ALL FILES
L64            47 S OI F?/AU
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L65             0 FILE MEDLINE
L66             0 FILE BIOSIS
L67             0 FILE EMBASE
L68             2 FILE CAPLUS
     TOTAL FOR ALL FILES
L69             2 S L64 AND L59 AND L54 AND L49

     FILE 'REGISTRY' ENTERED AT 12:22:30 ON 26 JUL 2005
                 E "2,4'-DDS"/CN 5
                 E "4,4'-DDS"/CN 5
                 E "2,4'-DIHYDROXYDIPHENYLSULFONE"/CN
                 E "2,4'-DIHYDROXYDIPHENYL SULFONE"/CN
L70             4 S E3-E6
                 E "4,4'-DIHYDROXYDIPHENYL SULFONE"/CN 5
L71             1 S E3

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L73            32 FILE BIOSIS
L74             0 FILE EMBASE
L75          1750 FILE CAPLUS
     TOTAL FOR ALL FILES
L76          1782 S L70 OR L71
L77             1 FILE MEDLINE
L78             1 FILE BIOSIS
L79             3 FILE EMBASE
L80           750 FILE CAPLUS
     TOTAL FOR ALL FILES
L81           755 S "4,4'-DIHYDROXYDIPHENYL SULFONE"
L82             0 FILE MEDLINE
L83             0 FILE BIOSIS
L84             0 FILE EMBASE
L85           170 FILE CAPLUS
     TOTAL FOR ALL FILES
L86           170 S "2,4'-DIHYDROXYDIPHENYL SULFONE"
L87             0 FILE MEDLINE
L88             0 FILE MEDLINE
L89             8 FILE BIOSIS
L90             1 FILE EMBASE
L91           737 FILE CAPLUS
     TOTAL FOR ALL FILES
L92           746 S (L76 OR L81 OR L86) AND (MAKE OR MAKING OR PROCESS? OR PRODUC
L93             0 FILE MEDLINE
L94             0 FILE BIOSIS
L95             0 FILE EMBASE
L96             0 FILE CAPLUS
     TOTAL FOR ALL FILES
L97             0 S TRI HYDROXY TRIPHENYL SULFONE OR TRIHYDROXY TRIPHENYL SULFONE
L98             0 FILE MEDLINE
L99             0 FILE BIOSIS
L100            1 FILE EMBASE
L101            6 FILE CAPLUS
     TOTAL FOR ALL FILES
L102            7 S TRIPHENYLSULFONE OR TRIPHENYL SULFONE OR TRIHYDROXY(L)(SULFON
L103            0 FILE MEDLINE
L104            0 FILE BIOSIS
L105            0 FILE EMBASE
L106            0 FILE CAPLUS
     TOTAL FOR ALL FILES
L107            0 S L102 AND L92
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L108            0 FILE MEDLINE
L109            0 FILE BIOSIS
L110            0 FILE EMBASE
L111            8 FILE CAPLUS
     TOTAL FOR ALL FILES
L112            8 S L92 AND CRYSTAL? AND CRUDE
L113            0 FILE MEDLINE
L114            0 FILE BIOSIS
L115            0 FILE EMBASE
L116            5 FILE CAPLUS
     TOTAL FOR ALL FILES
L117            5 S L112 NOT (L39 OR L69)

=> log y
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    74.45     202.41

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -3.65      -8.03

STN INTERNATIONAL LOGOFF AT 12:29:30 ON 26 JUL 2005
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